DRAWMER

Dual Channel Vacuum Tube Compressor

OPERATORS MANUAL

CONTENTS

COPYRIGHT
This manual is copyrighted © 2002 by Drawmer Electronics, Ltd. With all rights reserved. Under copyright laws, this manual may not be duplicated in whole or in part without the written consent of Drawmer.

ONE YEAR LIMITED WARRANTY
Drawmer Electronics Ltd., warrants the Drawmer Tube Station 2 audio processor to conform substantially to the specifications of this manual for a period of one year from the original date of purchase when used in accordance with the specifications detailed in this manual. In the case of a valid warranty claim, your sole and exclusive remedy and Drawmer's entire liability under any theory of liability will be to, at Drawmer's discretion, repair or replace the product without charge, or, if not possible, to refund the purchase price to you. This warranty is not transferable. It applies only to the original purchaser of the product.

For warranty service please call your local Drawmer dealer. Alternatively call Drawmer Electronics Ltd. at +44 (0)1709 527574. Then ship the defective product, with transportation and insurance charges pre-paid, to Drawmer Electronics Ltd., Coleman Street, Parkgate, Rotherham, S62 6EL UK. Write the RA number in large letters in a prominent position on the shipping box. Enclose your name, address, telephone number, copy of the original sales invoice and a detailed description of the problem. Drawmer will not accept responsibility for loss or damage during transit.

This warranty is void if the product has been damaged by misuse, modification or unauthorised repair.

THIS WARRANTY IS IN LIEU OF ALL WARRANTIES, WHETHER ORAL OR WRITTEN, EXPRESSED, IMPLIED OR STATUTORY. DRAWMER MAKES NO OTHER WARRANTY EITHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT. PURCHASER'S SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY SHALL BE REPAIR OR REPLACEMENT AS SPECIFIED HEREIN.

IN NO EVENT WILL DRAWMER ELECTRONICS LTD. BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECT IN THE PRODUCT, INCLUDING LOST PROFITS, DAMAGE TO PROPERTY, AND, TO THE EXTENT PERMITTED BY LAW, DAMAGE FOR PERSONAL INJURY, EVEN IF DRAWMER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Some states and specific countries do not allow the exclusion of implied warranties or limitations on how long an implied warranty may last, so the above limitations may not apply to you. This warranty gives you specific legal rights. You may have additional rights that vary from state to state, and country to country.

In the interests of product development, Drawmer reserve the right to modify or improve specifications of this product at any time, without prior notice.

DRAWMER Tube Station 2
Dual Channel Vacuum Tube Compressor

SAFETY CONSIDERATIONS

CAUTION - MAINS FUSE

TO REDUCE THE RISK OF FIRE REPLACE THE MAINS FUSE ONLY WITH THE SAME TYPE, WHICH MUST BE A CLASS 3, 250 VOLT, TIME DELAY TYPE, RATED AT 160mA WHERE THE MAINS INPUT IS SET TO 230 VOLTS AC. AND 315mA WHERE THE MAINS INPUT VOLTAGE IS 115 VOLTS AC.
ALL FUSES MUST COMPLY WITH IEC127-2.
THE FUSE BODY SIZE IS 20mm x 5mm.

CAUTION - MAINS CABLE

DO NOT ATTEMPT TO CHANGE OR TAMPER WITH THE SUPPLIED MAINS CABLE.

CAUTION - SERVICING

DO NOT PERFORM ANY SERVICING. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

INTRODUCTION

The Tube Station 2 is a high quality Dual Channel Vacuum Tube Compressor. It has an optional Digital Output module which enables SPDIF to be output from the unit. The Tube Station 2 is suitable for both live sound and studio applications. All buttons have status LEDs.

INSTALLATION

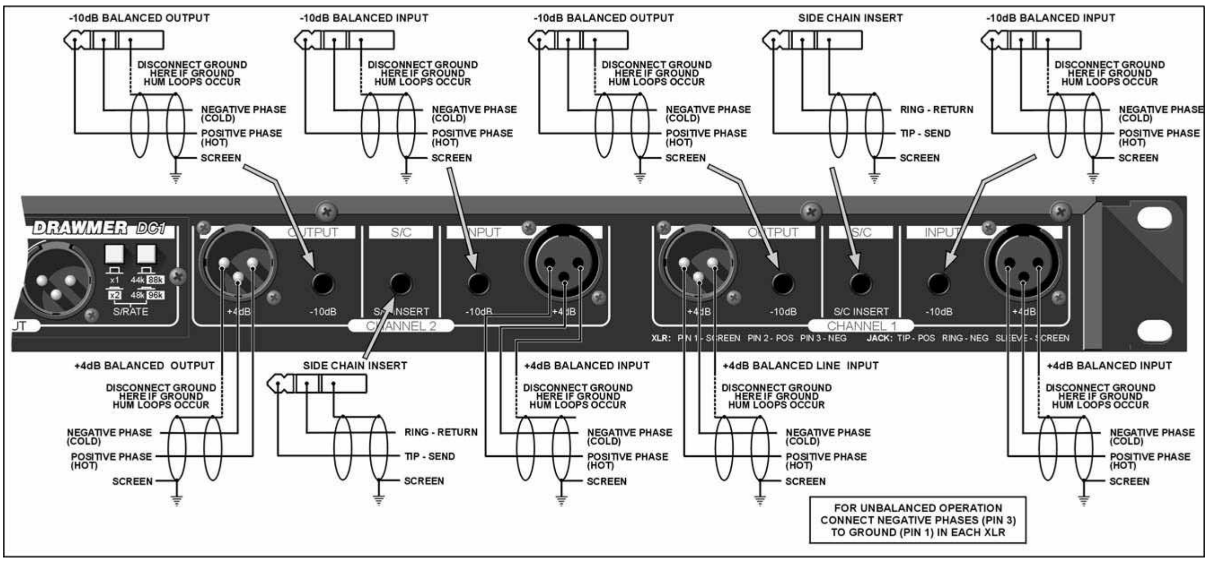
The TS1 is designed for standard 19" rack mounting and occupies 1U of rack space. Because the tube circuitry generates more heat than an equivalent solid-state design, it is recommended that 1u of space is left above and below the unit, where space is available, to allow the heat to dissipate. In addition the rack should be fan cooled, with air blowing onto the TS2, this will extend the life and reliability of the units. Avoid mounting the unit directly above power amplifiers or power supplies that radiate significant amounts of heat and always connect the mains earth to the unit.

AUDIO CONNECTIONS

Input and Output connections are provided for use at +4dBu via balanced XLRs. If unbalanced operation at +4dBu is required, simply connect the unused terminal to Ground inside the balanced jack socket. This applies to both inputs and outputs. The wiring convention for XLR being: pin 1 Ground, pin 2 Hot and pin 3 Cold. For use with unbalanced systems, the Cold pin 3 must be grounded at both input and output XLRs. For jack operation refer to diagram.

Interference: If the unit is to be used where it maybe exposed to high levels of disturbance such as found close to a TV or radio transmitter, we suggest that the unit be operated using the XLR connectors. The screens of the signal cables should be connected to the chassis connection on the XLR connector as opposed to connecting to pin1. The TS2 fully conforms to the EMC standards.

Ground Loops: If ground loop problems are encountered, **never** disconnect the mains earth, but try disconnecting the signal screen on one end of each of the cables connecting the outputs of the TS2 to the patchbay. If such measures are necessary, balanced operation is recommended.

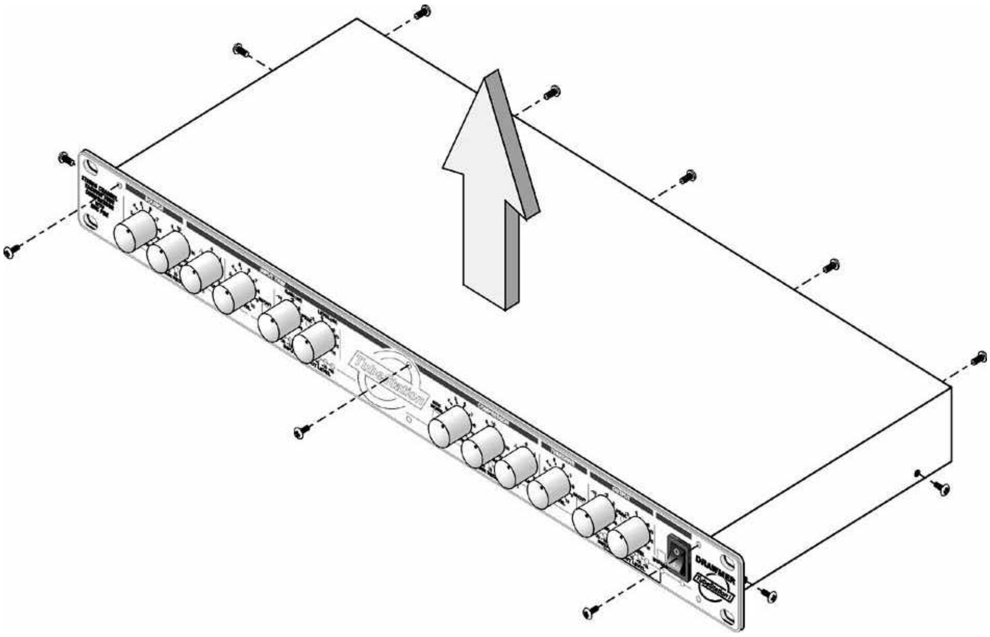


AUDIO CONNECTION DIAGRAM

POWER CONNECTION

If the unit is required to operate at a mains input voltage which is different to that as supplied:
The following procedure must be carried out by a qualified technical engineer.

1: Disconnect the unit from the mains.
2: Remove the twelve screws that retain the top cover.

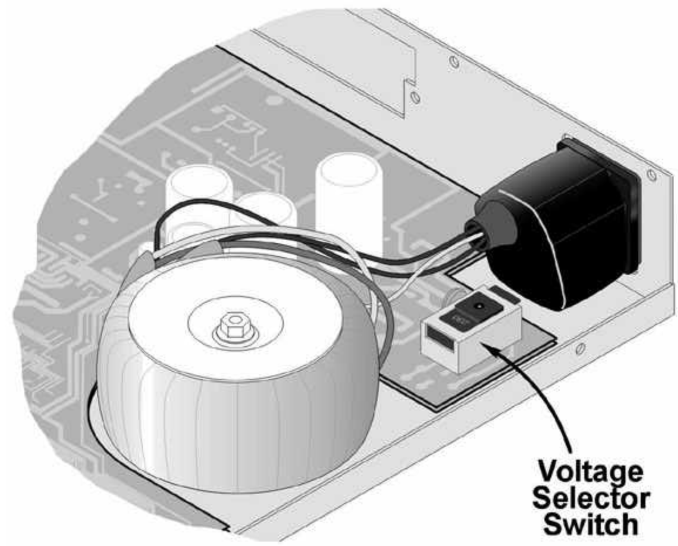


Accessing the internal power switch and fuse

3. Set the voltage rating and replace the fuse.

Mains Voltage	230V	Fuse Value	160mA.
Mains Voltage	115V	Fuse Value	315mA.

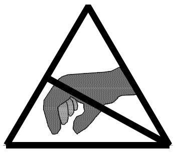
4. Replace the cover.



DIGITAL MODULE INSTALLATION

The Digital modules are designed **only** for operation within a Drawmer Tube Station.

Under NO circumstances should the module be installed into any other manufacturers' or custom device.



Full anti static handling precautions must be followed to prevent damage to sensitive circuitry.

To Install the module:

a: Disconnect the mains power cable from the unit.

b: Remove the top cover.

c: Remove the blanking panel from the rear of the unit.

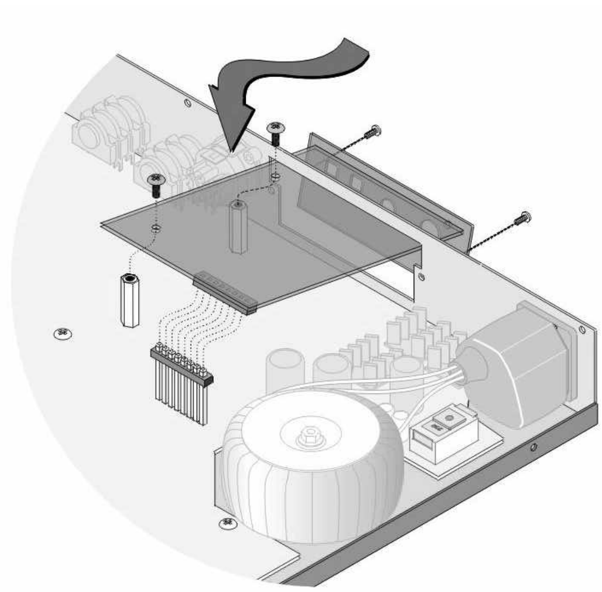
d: Slide the Digital Module through the rear panel.

e: Fasten the Digital Cover Plate to the rear panel.

f: Fasten the Digital PCB onto the three supporting posts.

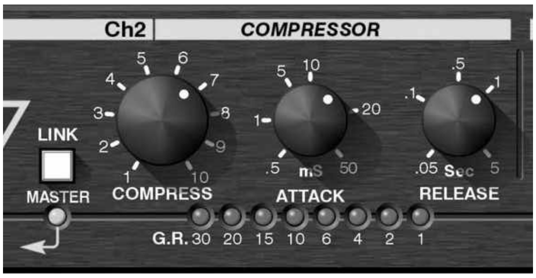
g: Connect the flexi strip into the holder on the main board.

h: Replace the top cover.



CONTROL DESCRIPTION

DYNAMICS SECTION



Compressor

This serves as the compressors input gain control, which has a preset threshold. Rotate clockwise until the required amount of compression is achieved. The amount of compression is indicated by a LED bar indicator on the front panel.

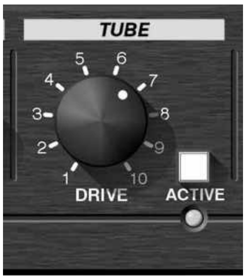
Attack

Attack controls the speed that the compressor responds to a rise in signal level. The sound of any percussive signals can be altered by using this control because long attack times allow the initial part of the signal to escape compression thus giving a certain amount of 'punch' to the sound.

Release

Release controls the speed which the compressor recovers when the signal drops in level. The faster the release, the louder the apparent output level. Most compressors create some distortion when short release times are used, so care should be taken to arrive at the correct setting.

TUBE DRIVE



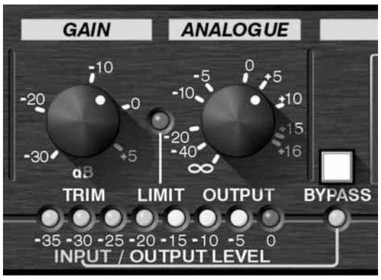
Tube Drive:

A continually variable control that regulates the amount of tube colouration.
Note: even with the control rotated fully counter-clockwise some tube warmth will be added. To disable any tube effect fully, the section must be disabled using the push button switch.

In/Out:

Switches the tube circuitry into the signal path and illuminates the status LED.

OUTPUT SECTION



Output Gain

The output level may be adjusted between !30dB's and +5dB's to compensate for level changes caused by compression and limiting.

Limit

This is a Hard level limiter fixed at +16dB (ref +4dBu). A led indicates when limiting occurs.

Meters

A eight-section LED meter display the signal level (from !35dB to 0dB) that is sent to the Digital Output (if fitted).

Analogue Output

Sets the overall Analogue output level of the channel from Off to +16dB. Adjusting this control does **not** change the meter levels.

Bypass

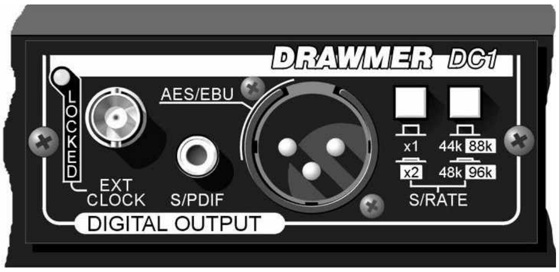
Switches the unit into Bypass to allow comparison with the input signal, illuminates the status LED.

LINKING

Stereo Link

Depressing this switch configures the unit in stereo mode where the left hand channel controls act as masters for both audio channels. The same degree of gain reduction is applied to both audio channels to prevent image shifting which would otherwise occur whenever the left and right signal dynamics varied from each other by any significant degree.
Note that whilst the knobs are linked and controlled by the left channel (ch1) the switches, Tube Active and Bypass, remain independent for each channel.

DIGITAL OUTPUT - OPTIONAL



EXT CLOCK

Auto detects whether a valid external clock is connected to the unit and automatically switches to high or low rate as appropriate.
A Led lights to indicate that the signal has locked.

SPDIF

Via a high quality RCA type phono jack where the data conforms to the Sony™ Phillips™ Digital InterFace format.

AES/EBU

Via an XLR connector.
Wired pin 1 screen, pin 2 and 3 balanced data, and the XLR shell connected to the chassis.

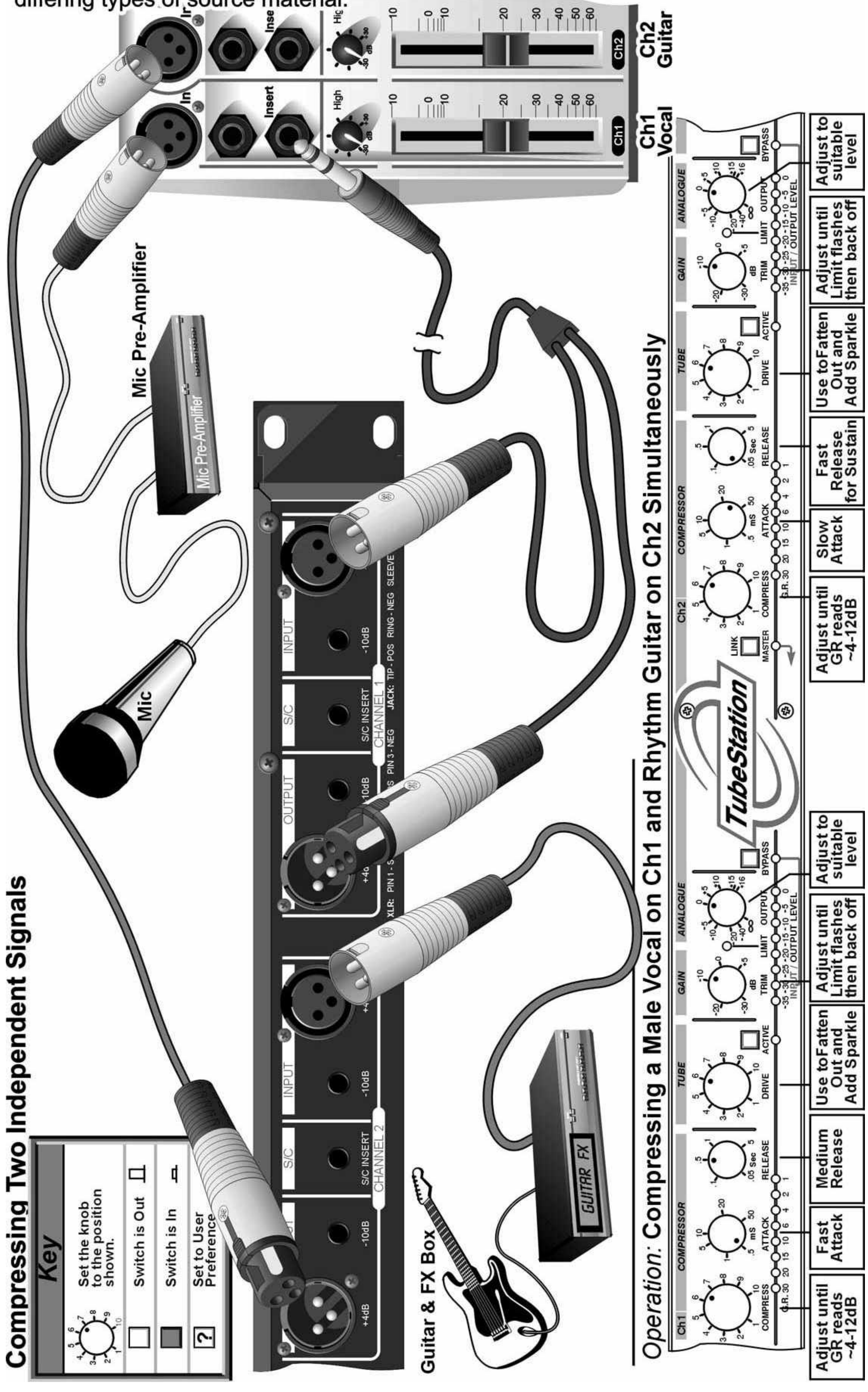
SAMPLE RATE

Selects between Single Sample Rate and Double Sample Rate.

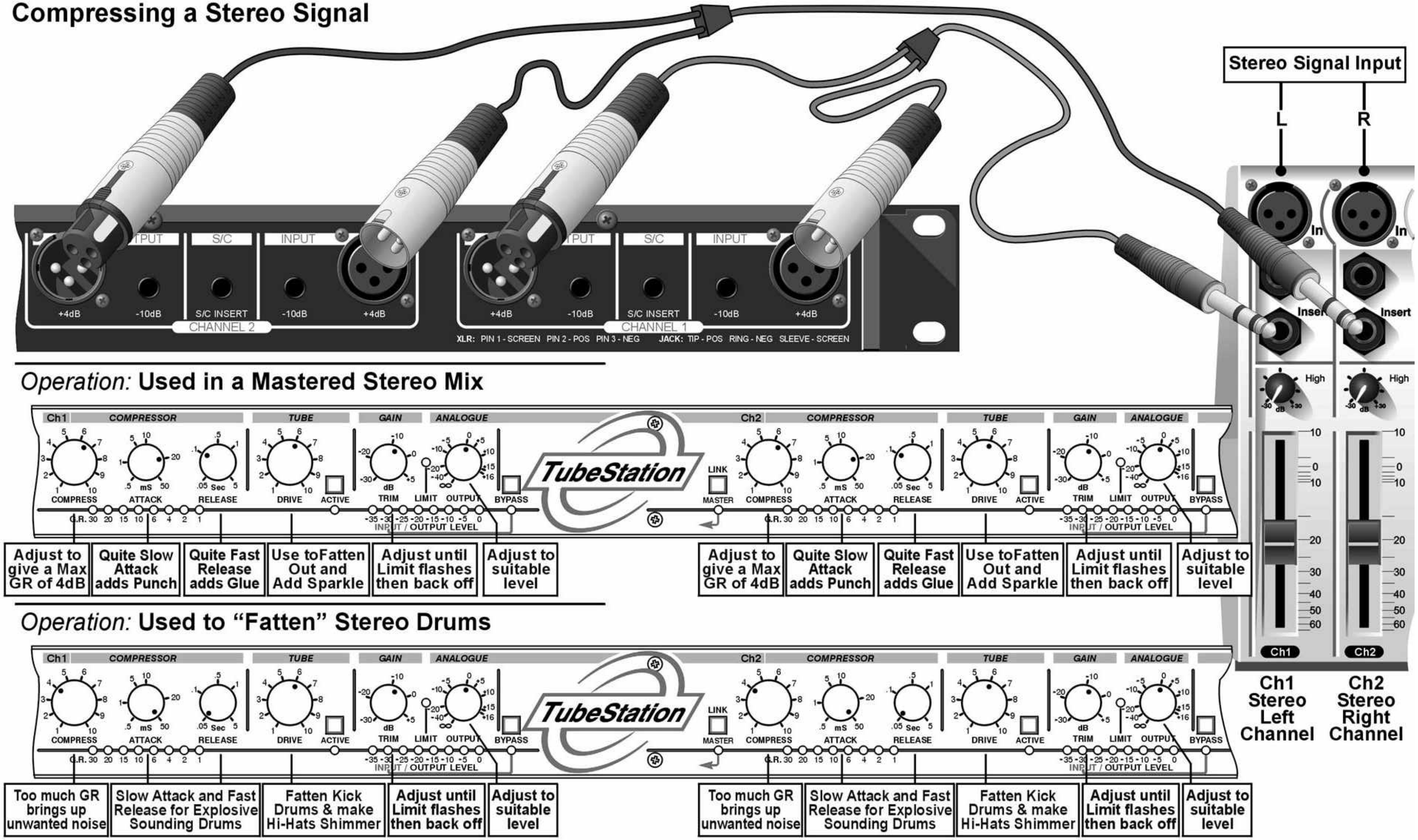
Selects either 44.1KHz or 48KHz on Single Rate and between 88.2KHz and 96KHz on Double Rate.

Typical Operation

All settings shown should be used as a guide only as they can vary significantly with differing types of source material.



Compressing a Stereo Signal



IF A FAULT DEVELOPS

For warranty service please call Drawmer Electronics Ltd. Or their nearest authorised service facility, giving full details of the difficulty. On receipt of this information, service or shipping instructions will be forwarded to you. No equipment should be returned under the warranty without prior consent from Drawmer or their authorised representative.

For service claims under the warranty agreement a service Returns Authorisation (RA) number will be given. Write this RA number in large letters in a prominent position on the shipping box. Enclose your name, address, telephone number, copy of the original sales invoice and a detailed description of the problem.

Authorised returns should be prepaid and must be insured. All Drawmer products are packaged in specially designed containers for protection. If the unit is to be returned, the original container must be used. If this container is not available, then the equipment should be packaged in substantial shock-proof material, capable of withstanding the handling for the transit.

CONTACTING DRAWMER

Drawmer Electronics Ltd., will be pleased to answer all application questions to enhance your usage of this equipment. Please address correspondence to:

Drawmer (Technical Help line) : Coleman St. : Parkgate : Rotherham : S62 6EL : UK
or, E-mail us on : tech@drawmer.com

Drawmer dealers, Authorised service departments and other contact information can be obtained from our web pages on: http://www.drawmer.com

TECHNICAL SPECIFICATIONS

(Measurements taken using +4dBu balanced input where applicable)

ANALOGUE

INPUT IMPEDANCE 20KS (bal)

MAXIMUM INPUT LEVEL +21dBu

LINE INPUT CMR Better than !40dB (20Hz - 22KHz)

OUTPUT IMPEDANCE 100S

MAXIMUM OUTPUT LEVEL +20dBu

BANDWIDTH 12Hz to 52KHz (!1dB)

NOISE (ref +4dBu) !86dB (22Hz - 22KHz)

DISTORTION

Typical Input	100Hz	1KHz	10KHz
Unity Gain	< 0.03%	< 0.03%	<0.03%

POWER REQUIREMENTS 115Volt or 230Volt at 50-60Hz, 15VA

FUSE RATING T160mA for 230Volt, T315mA for 115Volt
CONFORMING TO IEC127-2

FUSE TYPE 20mm x 5mm, Class 3 Slo-Blo, 250Volt working

CASE SIZE 482mm (w) x 44mm (h) x 228mm (d)

WEIGHT (incl packaging) 4.3 Kg

DIGITAL MODULE

THD and NOISE >105dB Unweighted
>108dB A- Weighted

MAXIMUM INPUT LEVEL +21dBu = 0dBfs

BLOCK DIAGRAM

